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CLAIMS:

1. A recognition process for handwritten characters, including:
generating sub-segments representing at least one character stroke, said sub-
5 segments each having a boundary enclosing the at least one stroke of the sub-
segment;
merging said sub-segments when the distance between centroids of the sub-
segments are less than a predetermined threshold; and
generating segments representing possible characters from said sub-segments.
- 10 2. A recognition process as claimed in claim 1, including processing a new
character stroke by including said new stroke in one of said sub-segments when said
stroke is within the boundary of said one of said sub-segments and generating a new
sub-segment including said new stroke when said new stroke is outside of said
15 boundary.
3. A recognition process as claimed in ^{claim 1} ~~claims 1 or 2~~, wherein generating one of
said segments includes processing at least three previously generated sub-segments.
- 20 4. A recognition process as claimed in claim 3, wherein said merging step includes
merging said sub-segments using a plurality of predetermined thresholds for said
distance.
5. A recognition process as claimed in claim 4, wherein said thresholds represent
25 a range of distance values.
6. A recognition process as claimed in claim 1, including merging adjacent
segments which produce a merged boundary having a height to width ratio closer to
one than the separate boundaries of the adjacent segments.

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A 7. A recognition process as claimed in claim 1, ~~2, 4, 5 or 6~~, including performing character recognition on said segments to generate a segment list representing said segments and respective possible characters associated with said segments.

5 8. A recognition process as claimed in claim 7, including generating a time sequence representation of said possible characters from said segment list and processing said time sequence representation using a language model to generate text representing recognised characters.

10 9. A recognition process as claimed in claim 1, wherein said generating and merging steps are executed in the real-time as character strokes are written.

10. A recognition apparatus having:

means for inputting character strokes;

15 means for generating sub-segments representing at least one character stroke, said sub-segments each having a boundary enclosing the at least one stroke of the sub-segment;

means for merging said sub-segments when the distance between centroids of the sub-segments are less than a predetermined threshold; and

20 means for generating segments representing possible characters from said sub-segments.

11. A recognition apparatus as claimed in claim 10, including means for processing a new character stroke by including said new stroke in one of said sub-segments when
25 said stroke is within the boundary of said one of said sub-segments and generating a new sub-segment including said new stroke when said new stroke is outside of said boundary.

B 12. A recognition apparatus as claimed in ^{claim 10} ~~claims 10 or 11~~, wherein said merging
30 means and said segment means process at least three previously generated sub-segments.

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13. A recognition apparatus as claimed in claim 12, wherein said merging means merges said sub-segments using a plurality of predetermined thresholds for said distance.

5 14. A recognition apparatus as claimed in claim 13, wherein said thresholds represent a range of distance values.

15. A recognition apparatus as claimed in claim 10, including means for merging adjacent segments which produce a merged boundary having a height to width ratio
10 closer to one than the separate boundaries of the adjacent segments.

A 16. A recognition apparatus as claimed in claim 10, ~~11, 12, 13, 14 or 15~~, including character recognition means for performing character recognition on said segments to generate a segment list representing said segments and respective possible
15 characters associated with the segments.

17. A recognition apparatus as claimed in claim 16, including means for generating a time sequence representation of said possible characters from said segment list and for processing said time sequence representation using a language model to generate
20 text representing recognised characters, and means for displaying said text.

18. A recognition apparatus as claimed in claim 11, having a segmentation unit which includes said sub-segment generating means, said merging means, said segment generating means and said new character stroke processing means, and
25 which operates in real-time for each written character stroke.

19. A recognition module stored on a computer readable storage medium, having:
means for generating sub-segments representing at least one character stroke,
said sub-segments each having a boundary enclosing the at least one stroke of the
30 sub-segment;

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means for merging said sub-segments when the distance between centroids of the sub-segments are less than a predetermined threshold; and

means for generating segments representing possible characters from said sub-segments.

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20. A recognition module as claimed in claim 19, including means for processing a new character stroke by including said new stroke in one of said sub-segments when said stroke is within the boundary of said one of said sub-segments and generating a new sub-segment including said new stroke when said new stroke is outside of said
10 boundary.

claim 19
21. A recognition module as claimed in ~~claims 19 or 20~~, wherein said merging means and said segment means process at least three previously generated sub-segments.

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22. A recognition module as claimed in claim 21, wherein said merging means merges said sub-segments using a plurality of predetermined thresholds for said distance.

20 23. A recognition module as claimed in claim 22, wherein said thresholds represent a range of distance values.

24. A recognition module as claimed in claim 19, including means for merging adjacent segments which produce a merged boundary having a height to width ratio
25 closer to one than the separate boundaries of the adjacent segments.

A 25. A recognition module as claimed in claim 19, ~~20, 22, 23 or 24~~, including character recognition means for performing character recognition on said segments to generate a segment list representing said segments and respective possible
30 characters associated with the segments.

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26. A recognition module as claimed in claim 25, including means for generating a time sequence representation of said possible characters from said segment list and for processing said time sequence representation using a language model to generate text representing recognised characters.

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27. A recognition module as claimed in claim 20, having a segmentation module which includes said sub-segment generating means, said merging means, said segment generating means and said new character stroke processing means, and which is executed in real-time for each written character stroke.

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28. A computer-readable medium containing executable instructions for performing the steps of:

generating sub-segments representing at least one character stroke, said sub-segments each having a boundary enclosing the at least one stroke of the sub-

15 segment;

merging said sub-segments when the distance between centroids of the sub-segments are less than a predetermined threshold; and

generating segments representing possible characters from said sub-segments.

20 29. A computer-readable medium as claimed in claim 1, wherein the steps performed include processing a new character stroke by including said new stroke in one of said sub-segments when said stroke is within the boundary of said one of said sub-segments and generating a new sub-segment including said new stroke when said new stroke is outside of said boundary.

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A 30. A computer-readable medium as claimed in claim ~~28 or 29~~, wherein the step of generating one of said segments includes processing at least three previously generated sub-segments.

30 31. A computer-readable medium as claimed in claim 30, wherein said merging step includes merging said sub-segments using a plurality of predetermined thresholds for

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said distance.

32. A computer-readable medium as claimed in claim 31, wherein said thresholds represent a range of distance values.

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33. A computer-readable medium as claimed in claim 28, including the step of merging adjacent segments with produce a merged boundary having a height to width ratio closer to one than the separate boundaries of the adjacent segments.

claim 28
A 10 34. A computer-readable medium as claimed in ~~claims 28, 29, 31, 32 or 33;~~ including the step of performing character recognition on said segments to generate a segment list representing said segments and respective possible characters associated with said segments.

15 35. A computer-readable medium as claimed in claim 34, including the step of generating a time sequence representation of said possible characters from said segment list and processing said time sequence representation using a language model to generate text representing recognised characters.

20 36. A computer-readable medium as claimed in claim 28, wherein said generating and merging steps are executed in the real-time as character strokes are written.

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